

Definition of Bachelor Thesis Project

MQTT-Extension for dynamic authentication and authorization

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Assignment In the world of IoT (Internet of Things) the message protocol MQTT (MQ Telemetry Transport) plays a major role for the discrete message transport between the 'Things'. MQTT is a publish/subscribe messaging transport protocol which is completely agnostic to the content it delivers. Among other things it is used for "machine to machine" communication in networks with very low bandwidth and energy sensitive devices. MQTT as it stands is designed without any interactive authentication- and authorization abilities in order to restrict the messages sent in any dimension. Hence it is possible to flood any topic with unexpected (too long / too many) messages. This is a clear attack-vector which can be used to massively disturb a system or even to disable it completely.

The aim of this thesis is to provide a mqtt-alike way to eliminate the described attack-vector. In particular, the following aspects are crucial for this thesis:

- Authentication on a per message level with minimal computational- and bandwidth consumption in mind
- Sender authorization for sending messages of specific maximum space in order to protect weak receivers
- Sender authorization with minimal impact for the existing protocol MQTT v3.1.1 OASIS Standard

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